

Patent Claims

1. Apparatus for determining and/or monitoring the volume, and/or
5 mass, flow rate of a medium (4) flowing through a containment (2) in
a streaming direction (S), comprising at least one ultrasonic
transducer (5, 6), which emits and/or receives ultrasonic measuring
signals, and a control/evaluation unit, which determines the volume,
and/or mass, flow rate of the medium in the containment on the basis
10 of the ultrasonic measuring signals according to the travel-time-
difference principle or according to the Doppler principle,
characterized in that
associated with the control/evaluation unit (11) is at least one
component of high power uptake and
15 the control/evaluation unit (11) is embodied such that the component
(12) of high power uptake is operated intermittently in a measuring
phase and in an idle phase, wherein the component (12) is activated
in the measuring phase, while the component (12) has a reduced
power uptake, or is turned off, in the idle phase.
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2. Device as claimed in claim 1,
characterized in that
the flow measuring device (1) is a clamp-on flow measuring device or
a measuring device which can be placed within the containment (2).
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3. Device as claimed in claim 1 or 2,
characterized in that
the component of high power uptake is an amplifier (13), an
analog/digital converter (14), a microprocessor (15) or a logic chip
30 (16).
4. Device as claimed in claim 1 or 3,

characterized in that
at least one component (17) having a switching function is provided,
wherein the component (17) having the switching function activates,
or deactivates, at least one component (12) of high power
5 consumption.

5. Device as claimed in claim 3 or 4,
characterized in that
a mechanism for decreasing current consumption is integrated into
10 the component (12) of high power takeup.

6. Device as claimed in claim 4,
characterized in that
the component (17) having a switching function comprises a
15 semiconductor switch (18).

7. Device as claimed in claim 1,
characterized in that
the time span between two successive measuring, or idle, phases of
20 the component (12) of high power uptake and/or the duration of a
measuring phase (t_2) and/or the duration of an idle phase (t_1) of the
component (12) of high power uptake is/are predetermined.

8. Device as claimed in claim 1,
25 characterized in that
an input unit (19) is provided, via which the time span between two
successive measuring, or idle, phases of the component (12) of high
power takeup and/or the duration of a measuring phase (t_2) and/or
the duration of an idle phase (t_1) of the component (12) of high power
30 takeup is predeterminable.

9. Device as claimed in claim 1,

- characterized in that
the control/evaluation unit (11) determines the travel time of the
measuring signals on the basis of predetermined system and/or
process variables and specifies the time span between two
5 successive measuring, or idle, phases of the component (12) of high
power takeup and/or the duration of a measuring phase (t_2) and/or
the duration of an idle phase (t_1) of the component (12) of high power
takeup, as a function of the determined travel time.
- 10 10. Device as claimed in one or more of the preceding claims,
characterized in that
the control/evaluation unit (11) determines the travel time of the
measuring signals on the basis of predetermined system and/or
process variables, and the control/evaluation unit (11) predetermines
15 the time span between two successive measuring, or idle, phases of
the component (12) of high power takeup and/or the duration of a
measuring phase (t_2) and/or the duration of an idle phase (t_1) of the
component (12) of high power takeup, as a function of the
determined travel time and as a function of the energy which is
20 available.
11. Device as claimed in claim 1,
characterized in that,
associated with the control/evaluation unit (11) is an energy storage
25 element (20), which is sized such that it can at least store the energy
required in the measuring phase.